IN THE CLAIMS:

Please amend the claims as follows:

Claim 1 (Currently Amended): A solid immersion lens to be positioned on an optical axis from ~~attached to~~ an observed object to an optical system for leading an image of the observed object, including an objective lens into which light from the observed object is made incident, and to be used for an observation of the observed object, comprising:

a spherical surface; and

a bottom surface including an attaching surface to be attached to the observed object,

wherein

[[an]] the attaching surface of the solid immersion lens to the observed object is formed in a toroidal shape.

Claim 2 (Original): The solid immersion lens as set forth in Claim 1, wherein

when a to-be-attached surface of the observed object is set to an X-Y plane, a ratio of a radius of curvature in the X-direction of the toroidal shape to a radius of curvature in the Y-direction greater than the radius of curvature in the X-direction is provided as 1:3 ~ 1:∞.

Claim 3 (Original): The solid immersion lens as set forth in Claim 1, wherein

an attaching surface to the observed object is formed in a cylindrical shape.

Claim 4 (Original): The solid immersion lens as set forth in Claim 1, wherein an attaching surface to the observed object receives a hydrophilic treatment.

Claim 5 (Original): The solid immersion lens as set forth in Claim 1, wherein

the solid immersion lens is formed of a material with a refractive index n_L while having a spherical optical surface with a radius of curvature R_L, a distance along an optical axis from the vertex to a virtual observing surface when a refractive index of the observed object is equalized to the refractive index n_L is provided, by a coefficient k ($0<k<1$) set so that geometrical aberration characteristics satisfy predetermined conditions, as $L = R_L+k \times(R_L/n_L)$, and

when the refractive index of the observed object is provided as n_s and a thickness of the observed object to an actual observing surface is provided as t_s, a thickness along the optical axis satisfies $d_L = L-t_s \times(n_L/n_s)$.

Claim 6 (Original): The solid immersion lens as set forth in Claim 5, wherein

the thickness of the observed object to the actual observing surface is $t_s=0$, and the thickness along the optical axis is $d_L = L = R_L+ k \times(R_L/n_L)$.

Claim 7 (Original): The solid immersion lens as set forth in Claim 5, wherein

the coefficient k is a value within a range of $0.5 < k < 0.7$.

Claim 8 (Original): The solid immersion lens as set forth in Claim 5, wherein the coefficient k is a value within a range of $0 < k \leq 0.5$.

Claim 9 (Currently Amended): A microscope for observing an observed object, comprising:

an optical system for leading an image of the observed object, including an objective lens into which light from the observed object is made incident; and

the solid immersion lens as set forth in Claim 1,

and positioned on the optical axis from the observed object to the optical system.

Claim 10 (Currently Amended): A microscope as set forth in Claim 9, further comprising:

an optical coupling material dripping ~~feeding~~ unit for dripping ~~feeding~~ an optical coupling material on an observation point of the observed object.